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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/462,214	01/04/00	KODEMURA J	10936-38

IM52/0131

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EXAMINER	
JACKSON, M	
ART UNIT	**PAPER NUMBER**
1773	7

DATE MAILED: 01/31/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/462,214	KODEMURA, JUNJI	
	Examiner	Art Unit	
	Monique R Jackson	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☒ All b)☐ Some * c)☐ None of the CERTIFIED copies of the priority documents have been:

1.☐ received.

2.☐ received in Application No. (Series Code / Serial Number) _____ .

3.☒ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5 & 6* .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4, 5, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 4, 5 and 12 recite the limitation "wherein the cycloolefin polymer (a) is ..." however the independent claim 1 from which these claims depend recite that the polymer is selected from a or b. Therefore, the claims as recited do not specify that the adhesive does in fact comprise the cycloolefin polymer (a) only that the adhesive may comprise (a) a cycloolefin polymer having the further limitations of Claims 4, 5 and 12; or (b) an aromatic-condensed polymer. If the Applicant intends for the invention to comprise the cycloolefin as recited in Claims 4, 5 or 12, the claims should be amended to positively recite that the cycloolefin is present.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugio et al (USPN 4,503,186.) Sugio et al teach a curable resin adhesive composition comprising a polyphenylene ether resin which has excellent adhesiveness to a foil of a metal such as copper (Abstract; Col. 2, lines 30-40.) The polyphenylene ether resin may comprise polyphenylene ether obtained by poly-condensating at least one phenol to produce a polyphenylene ether with alcohol groups in a proportion of 5 to 100mol% based on the total number of monomer units in the polymer (Col. 4, lines 55.) Desirably the polyphenylene ether resins have a number average molecular weight of about 1,000 to about 30,000, with examples of the polyphenylene ethers inherently having a glass transition temperature greater than 100°C (Col. 4, lines 35-57.) Polyphenylene ether resins having a relatively low molecular weight have good solubility and lend themselves to good handling, and on the other hand, polyphenylene ether resins having a relatively high molecular weight improve the mechanical properties of the resin composition (Col. 4, lines 57-63.) Thus, depending upon these properties, the polyphenylene ether resin is properly selected to suit a particular end use (Col. 4, lines 63-65.) The composition further comprises other polymeric resin materials including low-molecular weight resins, including epoxy resins, within a range of 1 to 50 parts by weight per 100 parts by weight of the polyphenylene ether (Col. 3, lines 23-55; Col. 5, lines 23-46; Col. 8, line 32 – Col. 9, lines 19_ Natural, Reinforcing materials or fillers in fibrous or powdery form may be incorporated in the composition including non-conductive inorganic and conductive fillers such as carbon black, finely divided silica, fired clay, basic magnesium silicate, powdery diatomaceous earth, alumina, calcium carbonate, magnesium carbonate, magnesium oxide, kaolin, sericite and boron nitride, wherein the composition comprising a conductive filler would be an anistropic conductive

material (Col. 10, lines 37-44.) The filler material may be used in an amount of up to 400 parts by weight per 100 parts by weight of the resin solid (Col. 10, lines 54-57.) Sugio et al further teach that the adhesive composition can be used to produce copper-clad materials such as for use in the electrical field or as circuit boards (Col. 1, lines 5-53.) The curable resin composition may be applied to various uses and by various processing methods including applying the composition as a coating on a substrate or by forming a sheet of the material which can then be laminated, such as by placing the composition between two copper foils and applying pressure and heat at a temperature above the glass transition temperature of the cyclic polymer and then cooled (Col. 11, lines 8-44; Examples.) When the curable composition is in the form of a solution, the composition is dried to remove solvents from the adhesive (Examples.)

5. Claims 1-6, 11-12, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Minami et al (USPN 5,179,171.) Minami et al teach a random copolymer that has excellent transparency, heat resistance, heat aging resistance, chemical resistance, solvent resistance, dielectric properties and mechanical properties; and comprises polymerized units from ethylene and at least one cycloolefin (Abstract; Col. 15, lines 53-58.) Those having a low molecular weight are useful as electric insulating materials and hot-melt adhesives, while those having a high molecular weight are useful in the optical and electrical fields, and may be formed into films (Col. 15, line 58 – Col. 16, line 14.) The copolymer may be an addition copolymer of an alicyclic monomer having a norbonene ring and a vinyl compound or an addition polymer of a cyclic conjugated diene monomer (Col. 4-8; Col. 10, line 52 – Col. 11, line 9.) The copolymer may be grafted with unsaturated carboxylic acids and/or their derivatives, styrenes, organic silicon compounds having an olefinically unsaturated bond and a hydrolyzable group, or

unsaturated epoxy monomers, in an amount of 0.1 to 50 parts by weight grafting monomer per 100 parts by weight of the random copolymer, which would result in a mol % within the instantly claimed range (Abstract; Col. 17, line 40 – Col. 19, line 53.) The copolymers may be mixed with lubricants and fillers as required (Col. 13, lines 21-33.) Examples of the fillers include inorganic or organic fibrous or powdery fillers such as glass fibers or beads, silver- or aluminum-coated glass fibers or beads, stainless steel fibers, carbon fibers, talc, calcium carbonate, magnesium hydroxide, metal powders, or graphite (Col. 15, lines 41-52.) The copolymers composition further comprises a low-molecular weight polymer and may be blended with other polymers such as epoxide polymers (Col. 11, lines 65-67; Col. 12, line 67- Col. 13, line 1; Col. 16, line 27 - Col. 17, line 2.) The modified random copolymer has a high glass transition temperature Tg, with values ranging from 10 to 240°C (Col. 12, line 1; Col. 13, lines 15-20.)

6. Claims 1-6, 11-12, 16-19 are rejected under 35 U.S.C. 102(e) as being anticipated by McIntosh, III et al. McIntosh et al teach silyl substituted polymers of polycycloolefins that have been addition polymerized from polycycloolefin monomers containing at least one norbornene moiety (Col. 12, lines and are useful in a wide variety of applications including a broad range of electronics and microelectronics applications including planarizing dielectric layers in IC manufacture, passivation layers, as protective coatings, as adhesives, as polymers for printed wire board fabrication, for flexible circuit boards, as tape automated bonding substrates, as dielectric layers in multichip modules and other high density interconnect devices (Abstract; Col. 1, lines 7-12; Col. 37, line 65 – Col. 38, line 7.) The polymers have molecular weights ranging from 5,000 to about 500,000 (Col. 37, lines 60-64.) The addition polymers have a glass

transition of at least 250°C (Claim 1.) The addition polymer comprises repeating units containing silyl functional groups of at least 5 mole % of the polymer and may also include hydroxy substitutents (Col. 12, lines 14-56; Claim 6.) The polymers are prepared by polymerizing the polycyclic monomers of the invention, such as tetracyclododecene, alone or in optional combination with certain acyclic monomers (Col. 8, lines 43-48; Col. 12, lines 57-67.) The polymers of this invention may be used directly or may be modified to impart other desirable characteristics. For instance, they can be filled with high dielectric constant ceramics or silica or other fillers including conductive and non-conductive with examples having various amounts of filler within the instantly claimed range (Col. 21, line 48 – Col. 22, line 14; Examples.) The polymers may also be graft-modified to graft a functional moiety to the polymer (Col. 18, line 63 – Col. 19, line 50.) The polymer composition may comprise low-molecular weight resins including epoxy-containing resins (Col. 13, 1-8; Col. 18; lines 31-41.) McIntosh et al further teach that the polymer compositions may be used in the form of coatings or films such as by spin coating or extrusion coating or the like, followed by curing of the polymer at desired temperatures including temperatures higher than the Tg of the polymer (Col. 38, 1-44; Examples.) McIntosh teach that when the polymer composition is applied via spin coating to a substrate, solvent is dried out to form an adhesive layer upon which a subsequent layer or element is placed (Col. 39, lines 1-24; Examples.)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 7-10 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minami et al. The teachings of Minami et al are discussed above. Minami et al do not specifically teach the amount of filler or low-molecular weight resin mixed with the copolymer nor that the conductive filler when blended with the copolymer forms an anisotropic conductive material. However, it would have been obvious to one having ordinary skill in the art to utilize routine experimentation to determine the optimum amount and type of filler and low-molecular weight resin to utilize to provide a copolymer composition with the desired properties, including anisotropy, for a particular end use.

9. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minami et al in view of the admitted prior art. The teachings of Minami et al are discussed above and include the use of the copolymer as coatings, films or adhesives. Minami et al do not specifically teach the process by which the copolymer adhesive is applied and heated under pressure to form the electrical part. However, the pressurzing and heating to a temperature higher than the Tg of the adhesive material to bond an adhesive material to a substrate or to bond two parts together with the adhesive is well known in the art as evidenced by the admitted prior art and therefore would have been obvious to one having ordinary skill in the art.

10. Claims 7-10 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McIntosh et al. The teachings of McIntosh et al are discussed above. McIntosh et al do not specifically teach the amount of filler or low-molecular weight resin mixed with the polymer nor that the conductive filler when blended with the polymer forms an anisotropic conductive material. However, it would have been obvious to one having ordinary skill in the art to utilize

routine experimentation to determine the optimum amount of filler and low-molecular weight resin to utilize to provide a polymer composition with the desired properties, including anisotropy, for a particular end use.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R Jackson whose telephone number is 703-308-0428. The examiner can normally be reached on Mondays-Thursdays, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5436 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

mrj
January 19, 2000

Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700